# GOVERNMENT OF INDIA
# EARTH SCIENCES
# LOK SABHA

UNSTARRED QUESTION NO:2605
ANSWERED ON:18.03.2008
MINERALS FROM POLYMETALLIC NODULES
Patil Shri Shriniwas Dadasaheb

**Will the Minister of EARTH SCIENCES be pleased to state:**

(a) whether many essential minerals including Gas Hydrates can be extracted from the polymetallic nodules found on the ocean floor;

(b) if so, whether preliminary assessment of geological condition has been done;

(c) if so, the results of this assessment;

(d) whether the assistance of any developed nation is likely to be taken at the initial stages of this exploration;

(e) if so, the details thereof; and

(f) the steps taken by the Government to explore the possibility of such extraction ?

## Answer

MINISTER OF SCIENCE & TECHNOLOGY AND MINISTER OF EARTH SCIENCES(SHRI KAPIL SIBAL)

a) Important metals viz. copper, nickel, cobalt and manganese can be extracted from the polymetallic nodules found on the ocean floor. However, polymetallic nodules do not contain any gas hydrates.

b) & c) Comprehensive assessment of the potential resources of polymetallic nodules was carried out in the Area allocated to India in Central Indian Ocean Basin.The polymetallic nodules are strewn on the ocean bed in this area, at a water depth ranging from 4 km to 6 km. On the basis of the exploration, 380.00 million tonnes of polymetallic nodules are estimated to be lying in this area measuring 75000 square km.

d) No, Sir. India is one of the leading countries in this field and there is no plan to take assistance of any developed nation.

e) Does not arise.

f) The Ministry of Earth Sciences has successfully commissioned a semi-continuous pilot plant with a capacity to process 500 kg per day of polymetallic nodules in 2002 and demonstrated extraction of Copper, Nickel and Cobalt from the nodules. The production of industry grade ferro-sillico-mangamnese ore from the residue obtained from the HZL plant has also been demonstrated.